Cashflows from Selling around Ex-Dividend Day

- The cash flows from selling before ex-dividend day are:

  $P_b - (P_b - P)\, t_{cg}$

- The cash flows from selling after ex-dividend day are:

  $P_a - (P_a - P)\, t_{cg} + D(1-t_o)$

- Since the average investor should be indifferent between selling before the ex-dividend day and selling after the ex-dividend day -

  $P_b - (P_b - P)\, t_{cg} = P_a - (P_a - P)\, t_{cg} + D(1-t_o)$

- Some basic algebra leads us to the following:

$$\frac{P_b - P_a}{D} = \frac{1 - t_o}{1 - t_{cg}}$$

Intuitive Implications

- The relationship between the price change on the ex-dividend day and the dollar dividend will be determined by the difference between the tax rate on dividends and the tax rate on capital gains for the typical investor in the stock.

Tax Rates	*Ex-dividend day behavior*
If dividends and capital gains are taxed equally	Price change = Dividend
If dividends are taxed at a higher rate than capital gains	Price change < Dividend
If dividends are taxed at a lower rate than capital gains	Price change > Dividend

The empirical evidence…

1966-1969

- Ordinary tax rate = 70%
- Capital gains rate = 28%
- Price change as % of Dividend = 78%

1981-1985

- Ordinary tax rate = 50%
- Capital gains rate = 20%
- Price change as % of Dividend = 85%

1986-1990

- Ordinary tax rate = 28%
- Capital gains rate = 28%
- Price change as % of Dividend = 90%

Dividend Arbitrage

- Assume that you are a tax exempt investor, and that you know that the price drop on the ex-dividend day is only 90% of the dividend. How would you exploit this differential?
  a. Invest in the stock for the long term
  b. Sell short the day before the ex-dividend day, buy on the ex-dividend day
  c. Buy just before the ex-dividend day, and sell after.
  d. _____

Example of dividend capture strategy with tax factors

- XYZ company is selling for $50 at close of trading May 3. On May 4, XYZ goes ex-dividend; the dividend amount is $1. The price drop (from past examination of the data) is only 90% of the dividend amount.
- The transactions needed by a tax-exempt U.S. pension fund for the arbitrage are as follows:
  - 1. Buy 1 million shares of XYZ stock cum-dividend at $50/share.
  - 2. Wait till stock goes ex-dividend; Sell stock for $49.10/share (50 - 1* 0.90)
  - 3. Collect dividend on stock.
- Net profit = - 50 million + 49.10 million + 1 million = $0.10 million

Two bad reasons for paying dividends
1. The bird in the hand fallacy

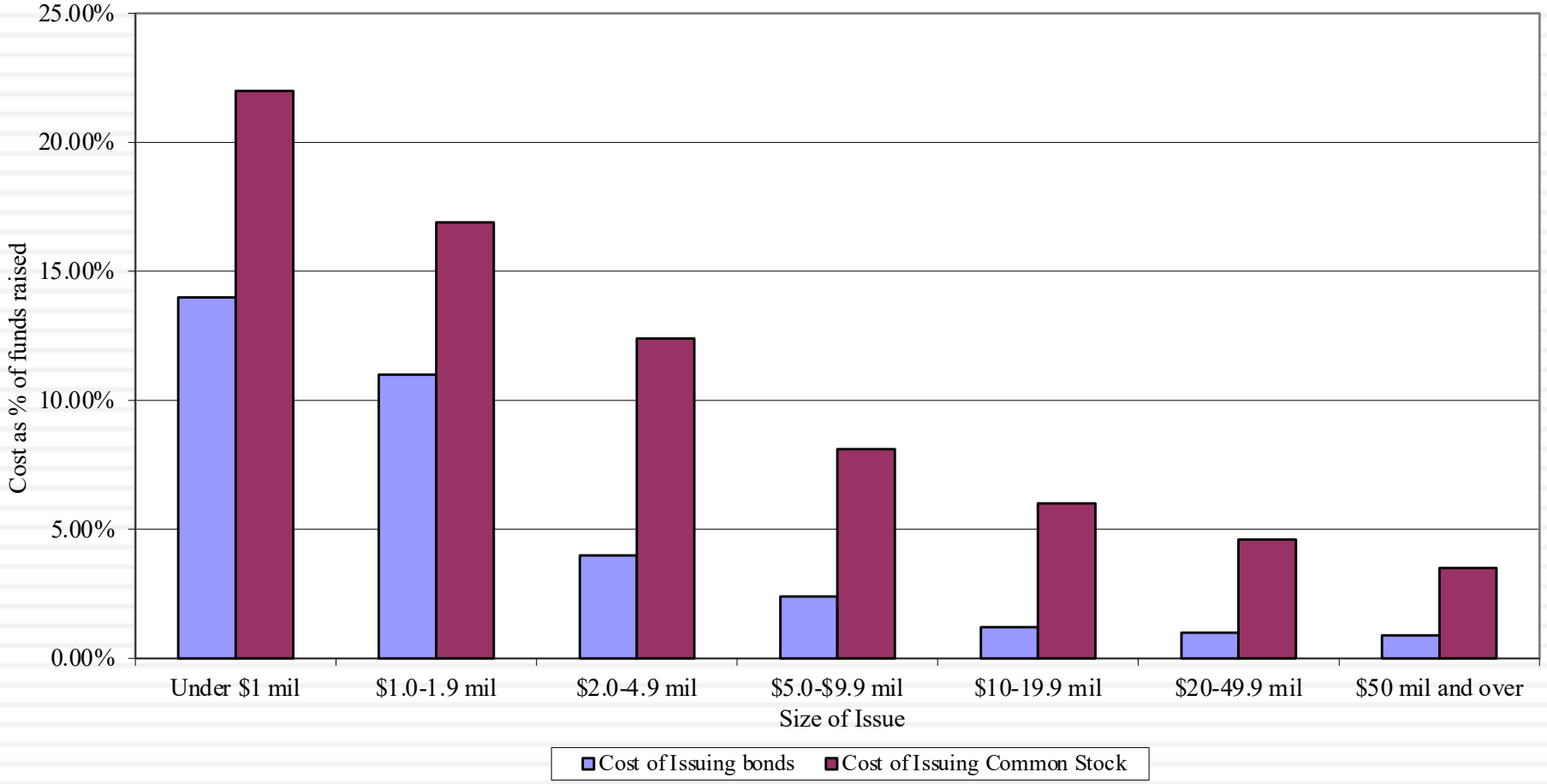
- Argument: Dividends now are more certain than capital gains later. Hence dividends are more valuable than capital gains. Stocks that pay dividends will therefore be more highly valued than stocks that do not.
- Counter: The appropriate comparison should be between dividends today and price appreciation today. The stock price drops on the ex-dividend day.

2. We have excess cash this year…

- Argument: The firm has excess cash on its hands this year, no investment projects this year and wants to give the money back to stockholders.
- Counter: So why not just repurchase stock? If this is a one-time phenomenon, the firm has to consider future financing needs. The cost of raising new financing in future years, especially by issuing new equity, can be staggering.

The Cost of Raising Capital

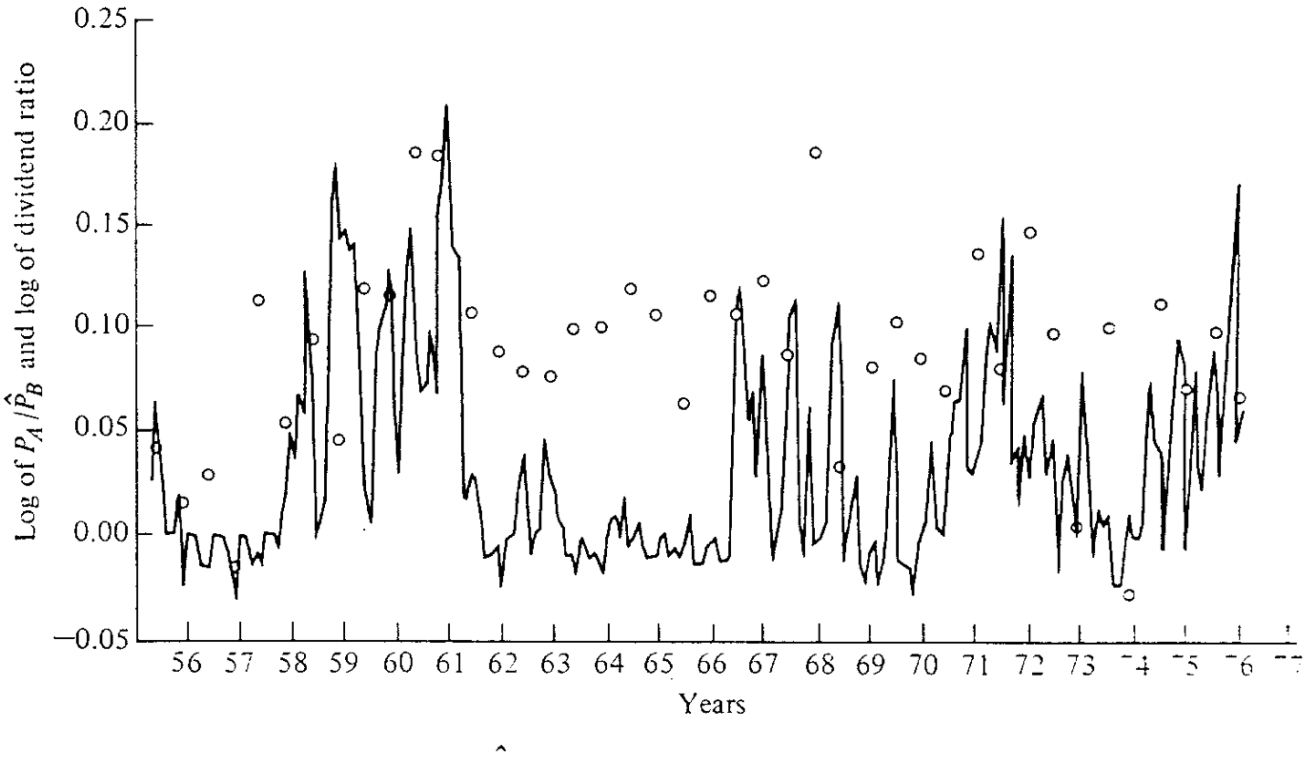
Figure 10.12: Issuance Costs for Stocks and Bonds



Three "good" reasons for paying dividends…

- Clientele Effect: The investors in your company like dividends.
- The Signalling Story: Dividends can be signals to the market that you believe that you have good cash flow prospects in the future.
- The Wealth Appropriation Story: Dividends are one way of transferring wealth from lenders to equity investors (this is good for equity investors but bad for lenders)

1. The Clientele Effect
The "strange case" of Citizen's Utility



Class A shares pay cash dividend

Class B shares offer the same amount as a stock dividend & can be converted to class A shares

Evidence from Canadian firms

Company	Premium for cash dividend shares
Consolidated Bathurst	+ 19.30%
Donfasco	+ 13.30%
Dome Petroleum	+ 0.30%
Imperial Oil	+12.10%
Newfoundland Light & Power	+ 1.80%
Royal Trustco	+ 17.30%
Stelco	+ 2.70%
TransAlta	+1.10%
Average across companies	+ 7.54%

A clientele-based explanation

- Basis: Investors may form clienteles based upon their tax brackets. Investors in high tax brackets may invest in stocks which do not pay dividends and those in low tax brackets may invest in dividend paying stocks.
- Evidence: A study of 914 investors' portfolios was carried out to see if their portfolio positions were affected by their tax brackets. The study found that
  - (a) Older investors were more likely to hold high dividend stocks and
  - (b) Poorer investors tended to hold high dividend stocks

Results from Regression: Clientele Effect

$$\text{Dividend Yield}_t = a + b\,\beta_t + c\,\text{Age}_t + d\,\text{Income}_t + e\,\text{Differential Tax Rate}_t + \varepsilon_t$$

Variable	Coefficient	Implies
Constant	4.22%	
Beta Coefficient	-2.145	Higher beta stocks pay lower dividends.
Age/100	3.131	Firms with older investors pay higher dividends.
Income/1000	-3.726	Firms with wealthier investors pay lower dividends.
Differential Tax Rate	-2.849	If ordinary income is taxed at a higher rate than capital gains, the firm pays less dividends.

Dividend Policy and Clientele

- Assume that you run a phone company, and that you have historically paid large dividends. You are now planning to enter the telecommunications and media markets. Which of the following paths are you most likely to follow?

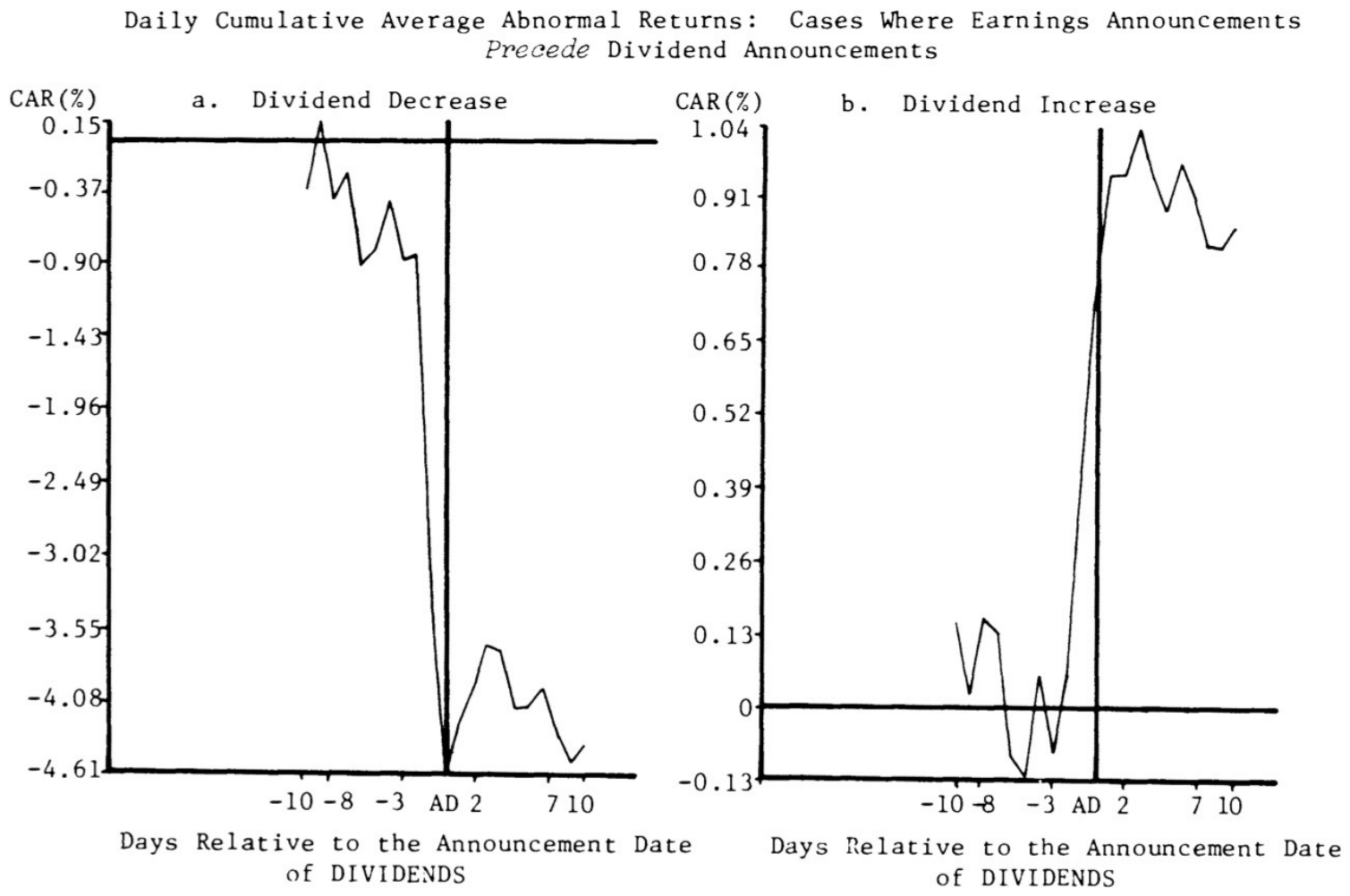
a. Courageously announce to your stockholders that you plan to cut dividends and invest in the new markets.

b. Continue to pay the dividends that you used to and defer investment in the new markets.

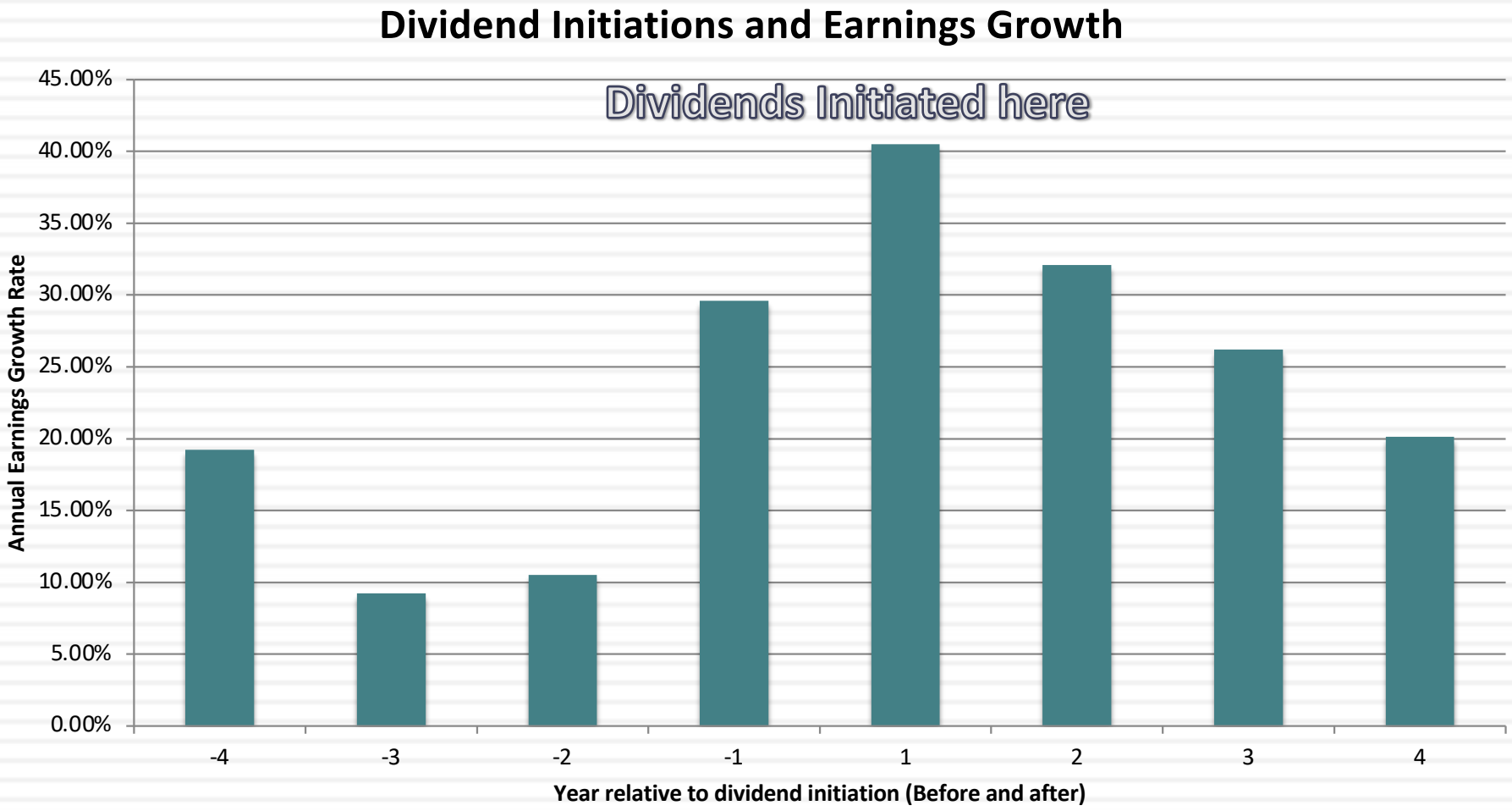
c. Continue to pay the dividends that you used to, make the investments in the new markets, and issue new stock to cover the shortfall

d. Other

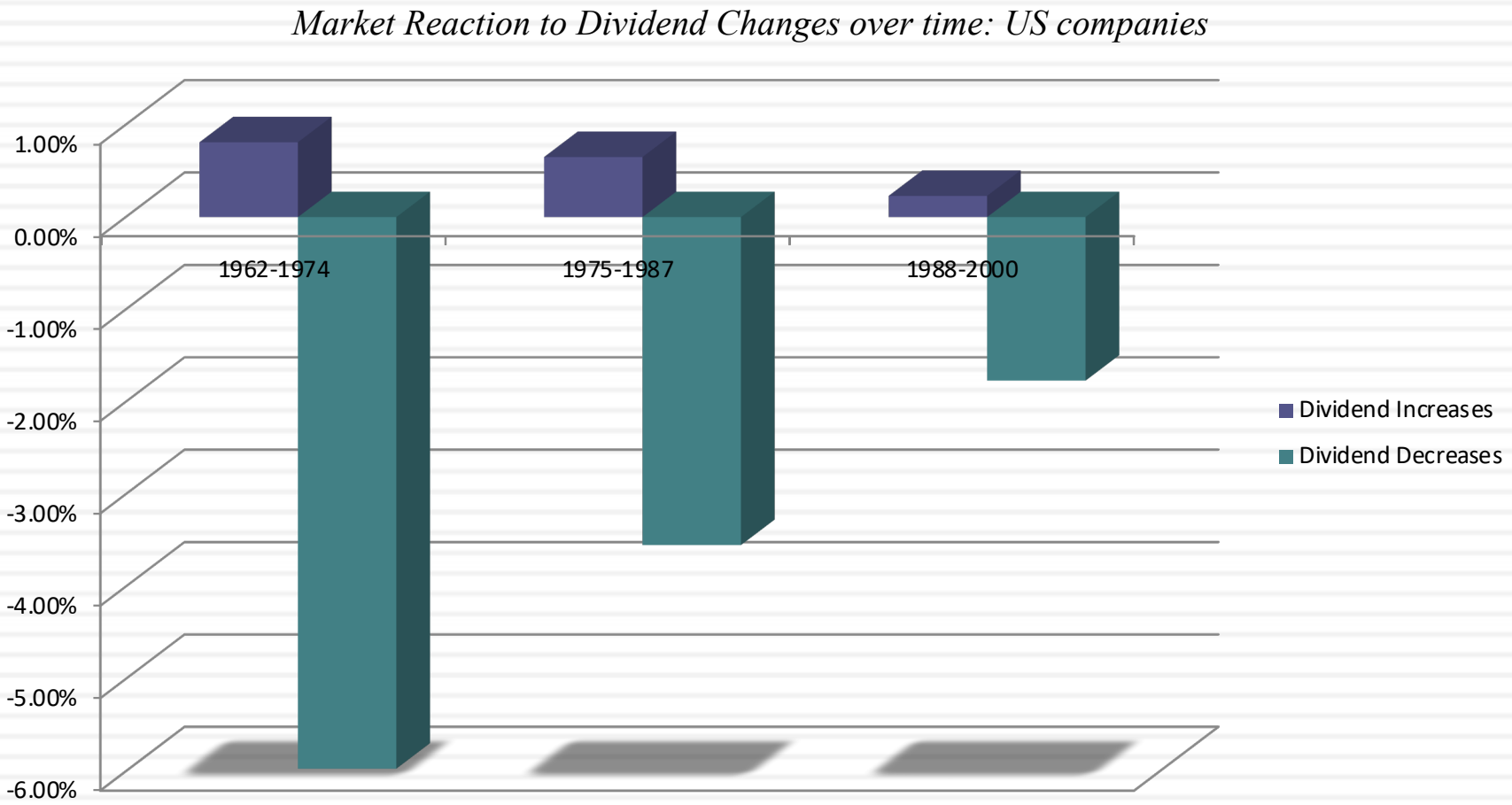
2. Dividends send a "signal"
Increases in dividends are good news..



But higher or new dividends may signal bad news (not good)

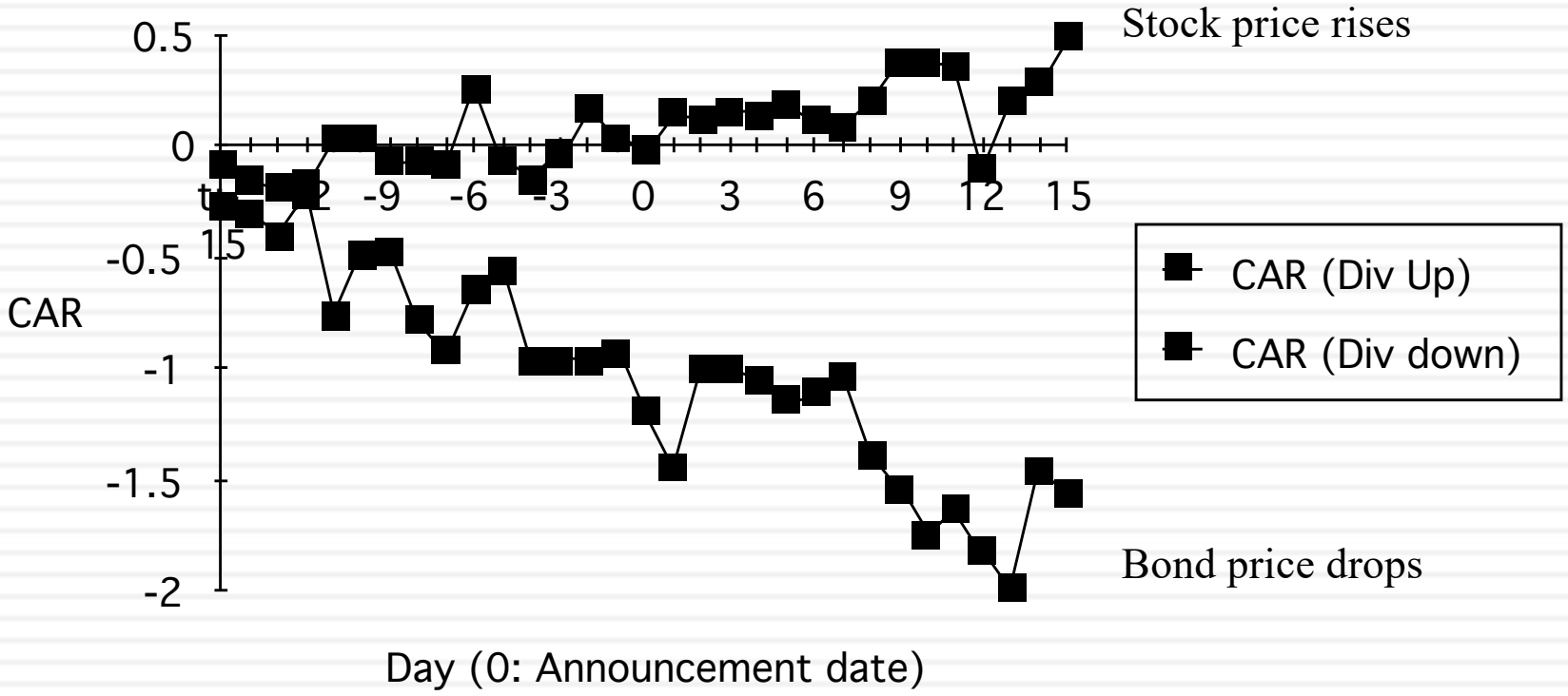


Both dividend increases and decreases are becoming less informative…



3. Dividend increases may be good for stocks… but bad for bonds..

EXCESS RETURNS ON STOCKS AND BONDS AROUND DIVIDEND CHANGES



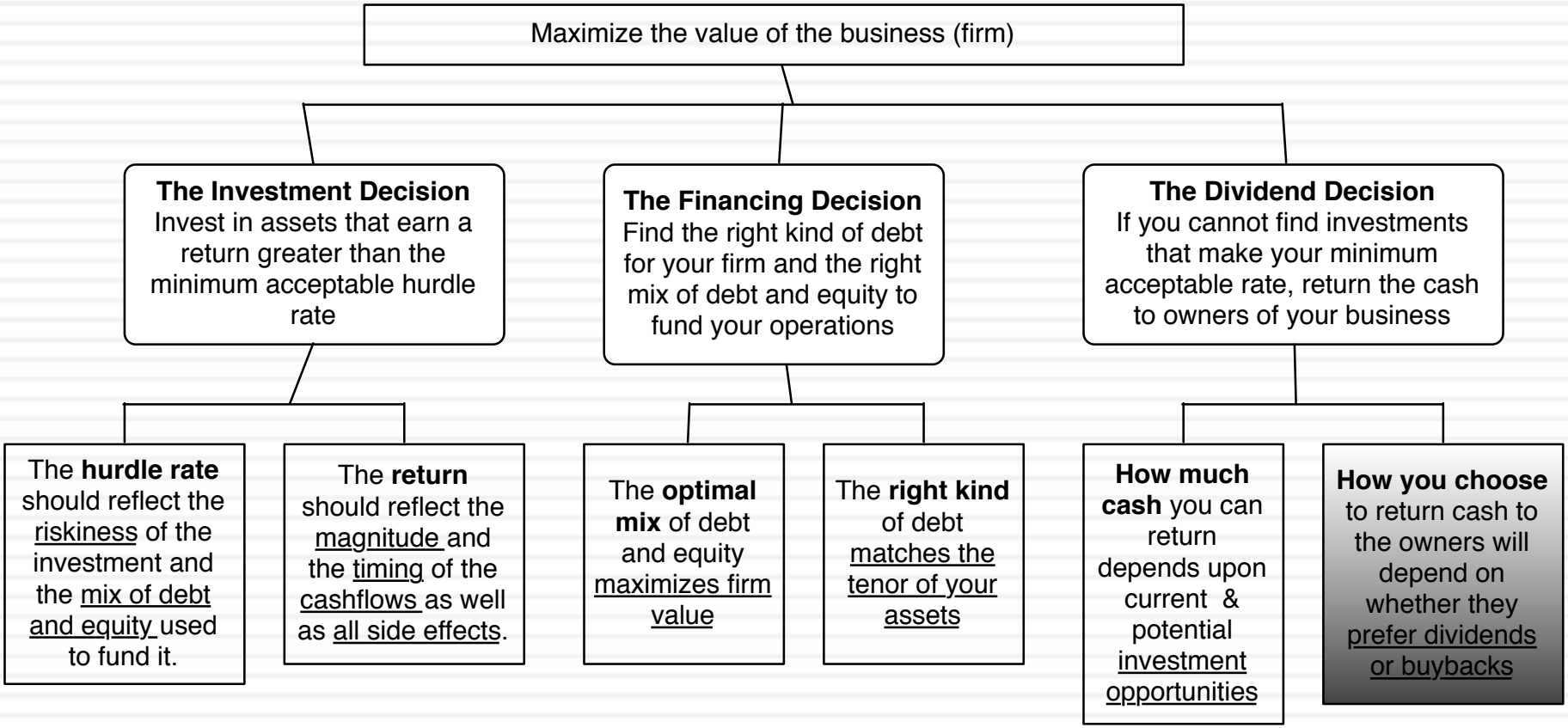
What managers believe about dividends…

Statement of Management Beliefs	*Agree*	*No Opinion*	*Disagree*
1. A firm's dividend payout ratio affects the price of the stock.	61%	33%	6%
2. Dividend payments provide a signaling device of future prospects.	52%	41%	7%
3. The market uses divided announcements as information for assessing firm value.	43%	51%	6%
4. Investors have different perceptions of the relative riskiness of dividends and retained earnings.	56%	42%	2%
5. Investors are basically indifferent with regard to returns from dividends and capital gains.	6%	30%	64%
6. A stockholder is attracted to firms that have dividend policies appropriate to the stockholder's tax environment.	44%	49%	7%
7. Management should be responsive to shareholders' preferences regarding dividends.	41%	49%	10%

ASSESSING DIVIDEND POLICY: OR HOW MUCH CASH IS TOO MUCH?

It is my cash and I want it now…

The Big Picture…



Assessing Dividend Policy

- Approach 1: The Cash/Trust Nexus
  - Assess how much cash a firm has available to pay in dividends, relative what it returns to stockholders. Evaluate whether you can trust the managers of the company as custodians of your cash.
- Approach 2: Peer Group Analysis
  - Pick a dividend policy for your company that makes it comparable to other firms in its peer group.

I. The Cash/Trust Assessment

Step 1: How much did the the company actually pay out during the period in question?

Step 2: How much could the company have paid out during the period under question?

Step 3: How much do I trust the management of this company with excess cash?

- How well did they make investments during the period in question?
- How well has my stock performed during the period in question?

How much has the company returned to stockholders?

- As firms increasing use stock buybacks, we have to measure cash returned to stockholders as not only dividends but also buybacks.
- For instance, for the five companies we are analyzing the cash returned looked as follows.

	Disney		*Vale*		*Tata Motors*		*Baidu*		*Deutsche Bank*	
Year	Dividends	Buybacks	Dividends	Buybacks	Dividends	Buybacks	Dividends	Buybacks	Dividends	Buybacks
2008	$648	$648	$2,993	$741	7,595₹	0₹	¥0	¥0	2,274 €	0 €
2009	$653	$2,669	$2,771	$9	3,496₹	0₹	¥0	¥0	309 €	0 €
2010	$756	$4,993	$3,037	$1,930	10,195₹	0₹	¥0	¥0	465 €	0 €
2011	$1,076	$3,015	$9,062	$3,051	15,031₹	0₹	¥0	¥0	691 €	0 €
2012	$1,324	$4,087	$6,006	$0	15,088₹	970₹	¥0	¥0	689 €	0 €
2008-12	**$4,457**	**$15,412**	**$23,869**	**$5,731**	**51,405₹**	**970₹**	**¥0**	**¥0**	**¥4,428**	**¥0**

A Measure of How Much a Company Could have Afforded to Pay out: FCFE

<table>
<tr><th>Standard Definition</th><th>Modified Version</th><th>Simplified (if debt ratio = constant)</th></tr>
<tr><td>Net Income</td><td>Net Income</td><td>Net Income</td></tr>
<tr><td>+ Depreciation</td><td rowspan="3">Reinvestment
- (Cap Ex - Depreciation + Change in Working Capital)</td><td rowspan="5">Reinvestment from Equity
- (Cap Ex - Depreciation + Change in Working Capital) (1 - Debt Ratio)</td></tr>
<tr><td>- Cap Ex</td></tr>
<tr><td>- Change in WC</td></tr>
<tr><td>FCFE before debt cash flow</td><td>FCFE before debt cash flow</td></tr>
<tr><td>+ New Debt Issued</td><td rowspan="2">Net CF from Debt
+ (New Debt Issued - Debt Repaid)</td></tr>
<tr><td>- Debt Repaid</td><td></td></tr>
<tr><td>FCFE</td><td>FCFE</td><td>FCFE</td></tr>
</table>

Estimating FCFE when Leverage is Stable

- The cash flow from debt (debt issue, netted out against repayment) can be a volatile number, creating big increases or decreases in FCFE, depending upon the period examined.
- To provide a more balanced measure, you can estimate a FCFE, assuming a stable debt ratio had been used to fund reinvestment over the period.

  Net Income

  - (1- Debt Ratio) (Capital Expenditures - Depreciation)

  - (1- Debt Ratio) Working Capital Needs

  = Free Cash flow to Equity

  Debt Ratio = Debt/Capital Ratio (either an actual or a target)

Disney's FCFE and Cash Returned: 2008 – 2012

	2012	2011	2010	2009	2008	Aggregate
Net Income	$6,136	$5,682	$4,807	$3,963	$3,307	$23,895
- (Cap. Exp - Depr)	$604	$1,797	$1,718	$397	$122	$4,638
- ∂ Working Capital	($133)	$940	$950	$308	($109)	$1,956
Free CF to Equity (pre-debt)	$5,665	$2,945	$2,139	$3,258	$3,294	$17,301
+ Net CF from Debt	$1,881	$4,246	$2,743	$1,190	($235)	$9,825
= Free CF to Equity (actual debt)	$7,546	$7,191	$4,882	$4,448	$3,059	$27,126
Free CF to Equity (target debt ratio)	$5,720	$3,262	$2,448	$3,340	$3,296	$18,065
Dividends	$1,324	$1,076	$756	$653	$648	$4,457
Dividends + Buybacks	$5,411	$4,091	$5,749	$3,322	$1,296	$19,869

Disney returned about $1.5 billion more than the $18.1 billion it had available as FCFE with a normalized debt ratio of 11.58% (its current debt ratio).

How companies get big cash balances: Microsoft in 1996…

- Consider the following inputs for Microsoft in 1996.
  - Net Income = $2,176 Million
  - Capital Expenditures = $494 Million
  - Depreciation = $ 480 Million
  - Change in Non-Cash Working Capital = $ 35 Million
  - Debt = None

FCFE = Net Income - (Cap ex - Depr) – Change in non-cash WC – Debt CF

= $ 2,176 - (494 - 480) - $ 35 - 0 = $ 2,127 Million

- By this estimation, Microsoft could have paid $ 2,127 Million in dividends/stock buybacks in 1996. They paid no dividends and bought back no stock. Where will the $2,127 million show up in Microsoft's balance sheet?

FCFE for a Bank?

- We redefine reinvestment as investment in regulatory capital.

$$FCFE_{Bank} = \text{Net Income} - \text{Increase in Regulatory Capital (Book Equity)}$$

- Consider a bank with $ 10 billion in loans outstanding and book equity of $ 750 million. If it maintains its capital ratio of 7.5%, intends to grow its loan base by 10% (to $11 and expects to generate $ 150 million in net income:

$$FCFE = \$150 \text{ million} - (11{,}000\text{-}10{,}000)^* (.075) = \$75 \text{ million}$$

Deutsche Bank: FCFE estimates (November 2013)

	Current	1	2	3	4	5
Risk Adjusted Assets (grows 3% each year)	439,851 €	453,047 €	466,638 €	480,637 €	495,056 €	509,908 €
Tier 1 as % of Risk Adj assets	15.13%	15.71%	16.28%	16.85%	17.43%	18.00%
Tier 1 Capital	66,561 €	71,156 €	75,967 €	81,002 €	86,271 €	91,783 €
Change in regulatory capital		4,595 €	4,811 €	5,035 €	5,269 €	5,512 €
Book Equity	76,829 €	81,424 €	86,235 €	91,270 €	96,539 €	102,051 €
ROE (increases to 8%)	-1.08%	0.74%	2.55%	4.37%	6.18%	8.00%
Net Income	-716 €	602 €	2,203 €	3,988 €	5,971 €	8,164 €
- Investment in Regulatory Capital		4,595 €	4,811 €	5,035 €	5,269 €	5,512 €
FCFE		-3,993 €	-2,608 €	-1,047 €	702 €	2,652 €

Dividends versus FCFE: Across the globe

	Africa and Middle East	Australia & NZ	Canada	China	Eastern Europe & Russia	EU & Environs	India	Japan	Latin America & Caribbean	Small Asia	UK	United States	Grand Total
No Cash Return, FCFE >0	21.42%	8.55%	14.07%	6.29%	34.17%	23.08%	34.47%	14.47%	16.72%	17.71%	11.77%	25.44%	18.54%
Cash Returned, < Positive FCFE	9.67%	5.59%	3.62%	8.67%	6.72%	7.61%	3.83%	9.59%	12.61%	10.02%	10.31%	9.30%	8.29%
Cash Accumulators	31.09%	14.14%	17.69%	14.96%	40.90%	30.70%	38.30%	24.06%	29.33%	27.73%	22.08%	34.74%	26.83%
No Cash Return, FCFE <0	22.67%	63.75%	64.00%	14.93%	20.73%	28.65%	31.45%	12.96%	15.05%	23.93%	36.53%	27.36%	27.45%
Cash Returned, Negative FCFE	18.60%	10.40%	11.24%	49.08%	13.73%	19.29%	11.86%	30.65%	27.17%	27.30%	25.00%	23.01%	25.67%
Cash Returned, >Positive FCFE	27.65%	11.72%	7.07%	21.03%	24.65%	21.37%	18.39%	32.34%	28.45%	21.04%	16.40%	14.89%	20.05%
Cash Burners	68.91%	85.86%	82.31%	85.04%	59.10%	69.30%	61.70%	75.94%	70.67%	72.27%	77.92%	65.26%	73.17%

Cash Buildup and Investor Blowback: Chrysler in 1994